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BOOK REVIEW

BEWLEY, J. D., BLACK, M. (ed.): *PHYSIOLOGY AND BIOCHEMISTRY OF SEEDS IN RELATION TO GERMINATION. II. VIABILITY, DORMANCY, AND ENVIRONMENTAL CONTROL*. — Springer Verlag, Berlin—Heidelberg—New York 1982. 375 pp., DM 128.—; approx. US \$ 51.20.

Physiology and biochemistry of germinating seeds have been studied by numerous authors, but information on this topic was dispersed in various periodicals. J. D. Bewley and M. Black have prepared a concise and well written treatise on this problem called “Physiology and biochemistry of seeds in relation to germination”, in two volumes. In the first one development, germination and growth of seeds are discussed from the point of view of their structure, food reserves, maturation, imbibition *etc.* It was published in 1978. The second volume issued in 1982 and its main topics are viability, dormancy and environmental control. The whole matter was divided into six chapters; there is also a glossary and indexes of English and botanical names, the author index and subject index.

In the first chapter, called “Viability and Longevity” we find a critical review of various data on the life span of seeds, on their longevity, giving a special interest to storage conditions (temperature, humidity, oxygen pressure *etc.*), which are able to change the seed classification (microbiotic, macrobiotic seeds). The authors give basic equations for defining viability and differences between some biochemical characters, distinguishing viable from non-viable seeds.

In the following chapter dormancy is defined and its biological importance discussed in context with the ecology and distribution of the species. It is shown that dormancy can be fairly polymorph not only in different individuals of the same species, but also in the same mother plant.

The third chapter is dedicated to the release from dormancy. The influence of light, phytochrome, temperature and afterripening on the interruption of dormancy, and inhibition of dormancy by substances from the group of growth regulators, respiratory inhibitors, oxidants *etc.* are described. Special interest is given to the phytochrome system and to the status and transformation of phytochrome in seeds.

In the chapter “The control of dormancy” the mechanism of dormancy and of the release from dormancy is discussed.

The quality of membrane and a higher turnover in membrane proteins in dormant seeds than in non-dormant seeds are important. The authors are critical to the supposed role of the pentosephosphate cycle in the release from dormancy.

Present state of investigation of dormancy and problems to be solved in future are discussed in the following chapter.

The volume ends with evaluating environmental control of germination, *e.g.* by temperature, light, oxygen, CO₂, water relations *etc.* Of practical value is the discussion of osmotic pretreatment and the priming of seeds. It is shown how viability of seeds can be enhanced by imbibition of various anorganic salts, sugars or polyethylene glycol.

The book brings a wealth of facts concerning physiology and biochemistry of germinating seeds and shows lines of investigation for the future.

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